

## PM SURYA GHAR MUFT BIJLI YOJANA

The PM Surya Ghar Muft Bijli Yojana is an innovative initiative launched by the Government of India aimed at promoting renewable energy usage among households, particularly in rural and semi-urban areas. This scheme is part of the broader vision of achieving energy self-sufficiency and sustainability in India, while also addressing the issue of energy poverty. By providing free solar energy solutions, the government seeks to enhance the quality of life for citizens and reduce dependence on conventional energy sources.

The scheme aims to encourage the use of solar energy by providing households with the necessary infrastructure to harness this clean energy source.

By offering free solar power solutions, the government aims to ensure that even the most marginalized sections of society have access to reliable electricity.

With solar energy, households can significantly reduce their monthly electricity bills, providing financial relief to families.

The initiative supports the country's commitment to reducing carbon emissions and combating climate change by promoting the use of clean and renewable energy sources.

Under the PM Surya Ghar Muft Bijli Yojana, eligible households are provided with solar panels and related equipment at no cost. This reduces the financial burden on families who wish to switch to renewable energy.

The scheme includes provisions for technical assistance, ensuring that households can efficiently install and maintain their solar energy systems.

To maximize the benefits of the initiative, the government conducts training programs aimed at educating beneficiaries about the use of solar energy and the maintenance of solar systems.

The scheme primarily targets low-income households, including those living below the poverty line, to ensure that vulnerable sections of society can benefit from renewable energy sources.

The initiative is designed to promote sustainable practices, encouraging families to adopt eco-friendly energy solutions and contributing to the larger goal of environmental conservation.

Households interested in the scheme must first check their eligibility, which is typically based on income criteria and location.

Eligible households can apply through designated government portals or local authorities. The application process is designed to be simple and user-friendly.

Once approved, the government will coordinate the installation of solar panels and related equipment at the household's premises.

After installation, the performance of the solar systems will be monitored to ensure efficiency. Technical support will be provided to address any issues that may arise.

Families can save on electricity bills, allowing them to allocate their resources to other essential needs.

Access to reliable electricity empowers households, enabling them to engage in productive activities such as small businesses or online education.

The implementation of solar energy systems creates job opportunities in installation, maintenance, and support services.

Reliable electricity can improve health outcomes by providing light for study and work, reducing reliance on kerosene lamps, which are harmful to health.

By harnessing the power of renewable energy, this initiative not only aims to improve the living standards of millions but also contributes to the global efforts to combat climate change.

## Breaking the Silence: World Osteoporosis Day 2024

■ DR RASHID ANJUM, DR SABARATHINAM RAVI, DR TARSEM MOTTEN, DR AMIT THAKUR

As the crisp October air settles in, medical professionals and health advocates worldwide are gearing up for World Osteoporosis Day on October 20, 2024. This year's theme, "Say no to fragile bones," isn't just a catchy slogan-it's a rallying cry for a healthier future. As we delve into the complexities of this often-overlooked condition, it's clear that osteoporosis is more than just a medical issue-it's a public health crisis that demands our immediate attention.

### The Silent Epidemic: Understanding Osteoporosis

Osteoporosis is a systemic skeletal disorder characterised by low bone mass and microarchitectural deterioration of bone tissue. On a cellular level, there's an imbalance between forming new bone tissue and removing old bone tissue. Osteoclasts, which break down bone, become more active than osteoblasts, which build new bone. This imbalance makes bones porous, brittle, and more susceptible to fractures."

Osteoporosis, often dubbed the "silent disease," lurks in the shadows, quietly weakening bones until a sudden fracture brings it into sharp focus. It's a condition that affects millions globally, with India facing its osteoporosis crisis. Recent estimates suggest that over 50 million Indians are either osteoporotic or have low bone mass, a number that's set to climb as our population ages.

### The Devastating Impact

The consequences of osteoporosis can be severe and far-reaching. A minor fall or simple action like bending over or coughing can lead to a fracture, often in the hip, spine, or wrist. These fractures aren't just painful-they can be life-altering, robbing individuals of their independence and, in some cases, leading to long-term disability or even death.

Hip fractures, in particular, can have devastating consequences. Many patients never regain their previous level of mobility, and the mortality rate in the year following a hip fracture is alarmingly high. Spinal fractures, while less immediately catastrophic, can lead to chronic pain, loss of height, and a stooped posture.

### Risk Factors

While osteoporosis can affect anyone, certain factors significantly increase the risk:

- Age:** Our bones naturally become thinner and weaker as we age. After the age of 50, the risk of osteoporosis increases significantly.
- Gender:** Women are up to four times more likely than men to develop osteoporosis. The rapid decline in oestrogen levels during menopause accelerates bone loss.
- Family History:** Genetics play a significant role in bone health. If a parent or sibling has osteoporosis, your risk is higher.
- Race and Ethnicity:** Studies show that individuals of Asian and Caucasian descent are at higher risk compared to other ethnicities.
- Hormonal Imbalances:** Conditions affecting hormone levels, such as hyperthyroidism or hyperparathyroidism, can contribute to bone loss.
- Dietary Factors:** A diet low in calcium and vitamin D throughout life can contribute to diminished bone density and early bone loss.
- Lifestyle Choices:**
  - Sedentary lifestyle: Lack of exercise, especially weight-bearing activities, weakens bones.
  - Excessive alcohol consumption: More than two drinks a day can increase osteoporosis risk.
  - Tobacco use: Smoking is directly linked to decreased bone density.
- Medical Conditions:** Certain diseases and conditions increase the risk of osteoporosis, including:
  - Rheumatoid arthritis
  - Celiac disease
  - Inflammatory bowel diseases
  - Kidney or liver disease
  - Cancer
  - Multiple myeloma

**9. Medications:** Long-term use of certain medications can affect bone density:

- Corticosteroids (e.g., prednisone)
- Proton pump inhibitors
- Some anti-seizure medications

### Early symptoms:

One of the most insidious aspects of osteoporosis is its lack of early symptoms. However, some individuals may experience subtle signs such as:

- Gradual loss of height (1-2 inches) over time
- Development of a stooped posture
- Back pain caused by fractured or collapsed vertebrae

This silent progression underscores the importance of early detection and prevention. Regular bone density scans, particularly for those at higher risk, can help identify the condition before a fracture occurs. The World Health Organization (WHO) defines osteoporosis based on bone mineral density (BMD) measurements, with a T-score of -2.5 or lower indicating osteoporosis (high fracture risk). This standardised definition helps in early diagnosis and intervention.

### Building Better Bones: Comprehensive Prevention Strategies

The good news is that osteoporosis is largely preventable. Here are detailed strategies for maintaining and improving bone health:

- Nutrition:**
  - Calcium:** Adults need about 1,000-1,200 mg of calcium daily. Sources include:
    - Dairy products (milk, yoghurt, cheese)
    - Leafy greens (kale, spinach, collard greens)
    - Fish with edible bones (sardines, salmon)
    - Calcium-fortified foods (juices, cereals, breads)
    - Vitamin D: Aim for 600-800 IU daily. Sources include:
      - Sunlight exposure (15-20 minutes a day)
      - Fatty fish (salmon, tuna, mackerel)
      - Egg yolks
      - Fortified foods
      - Supplements (especially for those with limited sun exposure)
    - Other important nutrients:**
      - Protein: Essential for bone matrix
      - Vitamin K: Helps in calcium regulation
      - Magnesium: Contributes to bone strength
  - Exercise:** Regular physical activity is crucial for bone health:
    - Weight-bearing exercises:** Walking, jogging, dancing, tennis
    - Resistance training:** Weight lifting, using resistance bands
    - Balance exercises:** Tai chi, yoga (to prevent falls)
    - Aim for at least 30 minutes of exercise most days of the week
  - Lifestyle Changes:**
    - Quit smoking: Smoking decreases bone mass and increases fracture risk
    - Limit alcohol: Excessive alcohol interferes with calcium absorption
    - Maintain a healthy weight: Being underweight increases osteoporosis risk
    - Reduce caffeine intake: High caffeine consumption can decrease calcium absorption
  - Regular Check-ups:**
    - Bone density scans (DEXA): Recommended for:
      - Women aged 60 and older
      - Men aged 65 and older
      - Younger postmenopausal women and men aged 50-69 with risk factors
  - Fall Prevention:**
    - Home safety: Remove tripping hazards, improve lighting
    - Vision checks: Ensure proper vision correction
    - Medications review: Some medications can affect balance
    - Assistive devices: Use canes or walkers if needed

### Treatment Options: A Multifaceted Approach

For those diagnosed with osteoporosis, a range of treatment options is available:

- Medications:**
  - Bisphosphonates: (e.g., alendronate, risedronate) - inhibit bone resorption

- Denosumab: A monoclonal antibody that targets bone resorption
- Teriparatide: Anabolic agent (PTH analogue) that stimulate bone formation
- Hormone Replacement Therapy (HRT): For post-menopausal women, considering risks and benefits
- Romosozumab: A newer drug that both increases bone formation and decreases resorption

### 2. Lifestyle Modifications:

- Tailored exercise programs focusing on weight-bearing and balance exercises
- Nutritional counselling to ensure adequate calcium and vitamin D intake
- Fall prevention strategies

### 3. Pain Management:

- For those with fractures, various pain management techniques may be employed
- Physical therapy to improve mobility and strength

### 4. Orthopedic surgical Interventions:

- Vertebroplasty or kyphoplasty for spinal fractures
- Osteosynthesis or arthroplasty for hip fractures

**AIIMS Jammu:** Spearheading the Fight Against Osteoporosis At the All India Institute of Medical Sciences (AIIMS) in Jammu, we're taking a multifaceted approach to combat osteoporosis:

- Advanced Diagnostics:**
  - State-of-the-art DEXA scanner for accurate bone density measurement
- Comprehensive Treatment:**
  - Personalized treatment plans combining medication, nutrition, and exercise therapy
  - Multidisciplinary team approach involving orthopaedics, endocrinology, and physiotherapy
- Community Outreach:**
  - Regular awareness programs and screening camps in rural areas of Jammu and Kashmir
  - Educational initiatives in schools and colleges to promote early bone health awareness
  - Telemedicine services to reach remote areas with limited healthcare access

### A Call to Action: Breaking the Silence

As we mark World Osteoporosis Day 2024, it's clear that the fight against this silent epidemic requires a collective effort. From individuals making healthier lifestyle choices to healthcare providers offering cutting-edge treatments, everyone has a role to play. This World Osteoporosis Day let's commit to breaking the silence surrounding this condition. Here's how you can take action:

- Educate Yourself and Others: Learn about osteoporosis and share your knowledge with friends and family.
- Assess Your Risk: Talk to your healthcare provider about your osteoporosis risk and whether you need a bone density test.
- Make Lifestyle Changes: Incorporate bone-healthy habits into your daily routine.
- Support Research: Advocate for increased funding for osteoporosis research and treatment.
- Join the Conversation: Use social media to raise awareness about osteoporosis using the hashtag #WorldOsteoporosisDay.

Remember, it's never too early or too late to start caring for your bones. Whether you're building peak bone mass in your youth or working to maintain it in later years, every step towards better bone health is a step towards a more robust, healthier future. For more information or to schedule a bone health check-up, please get in touch with the Department of Orthopaedics at AIIMS Jammu. Together, we can build better bones and more vital lives, turning the tide against this silent epidemic and paving the way for a future where fragility fractures are a thing of the past.

(The writers are Dr Rashid Anjum, Dr Sabarathinam Ravi, Dr Tarsem Motten, Dr Amit Thakur Department of Orthopaedics, AIIMS Jammu).

## Burgeoning Population and its Implications

■ DR. BANARSI LAL

In many developing countries fertility rate is declining but even then population growth continues at an alarming rate. In 1804, world population was 1 billion; it was 2 billion in 1927, 3 billion in 1960, 4 billion in 1974, 5 billion in 1987, 6 billion in 1999, and 7 billion in 2013 and is 8.02 billion in 2023. India, China, United States, Indonesia and Pakistan are the world's five largest countries in terms of population. According to the UN world population grows at a rate of 1.2 per cent which makes a net addition of 77 million people every year. Six countries account for half of those annual increment-India tops the list with 21 per cent, followed by China 12 per cent, Pakistan 5 per cent, Bangladesh, Nigeria and the United States with 4 per cent each. Following reasons explain why population matters.

► About 800 million people are malnourished in worldwide and this number can increase significantly.

► Water scarcity stems in many parts of the world due to increase in human demand. Worldwide water tables are dropping down.

► Pollution is causing many respiratory diseases in human beings.

► Farming lands are suffering from soil erosion and desertification.

► The competition for resources is increasing day-by-day.

► Human beings are rapidly spoiling the earth's atmosphere.

► Wild habitats that shelter endangered plants and animals are giving way to human activities and needs.

► Lack of education in reproductive health is a factor in the upsurge of infectious diseases.

► By rapid population pressure migration pressures are aggravated.

► Civil conflict often emerges in societies where rapid population growth combines with environmental scarcity to undermine governments.

India was the first country in the world to launch a state sponsored population control programme in 1952. It was however met with much skepticism. After 1952, a sharp decline in death rates was not accompanied by a similar drop in birth rates. India has built-in population momentum because of its young age structure-one fifth of India's population is between 15-19 years of age. Different regions of the country with different demographic features required a different treatment was another reason of

its failure. India's population growth rate depends on how effectively the four Indian states i.e. Uttar Pradesh, Bihar, Rajasthan and Madhya Pradesh implement the policies because these states constitute about 40 per cent of the country's population growth. The fertility rate in these states is the highest. It has been observed that it has taken more time for the message like family planning to reach in these large agricultural and predominantly rural population states. It has been studied that fertility reduction began in the coastal areas of South India and then proceeded to spread inland. This was an advantage that the South had compared to the North. The Southern states have done better in providing family planning services. Population control programme has not been able to make inroads into all the pockets of the North Indian states as a result of which India's population has grown by gigantic proportions and in 2000 India touched 1 billion people mark. India has overtaken China in 2024 with a population of about 1.44 billion people i.e. 17.78 per cent of the world's population living on 2.4 per cent of the world's land area.

The burgeoning population has major implications for availability and sustainability of resources needed for people. People under the age of 25 account for more than 40 per cent in India. In this century the global population has increased threefold while India's population has increased five times in the same period. It can be mentioned that before independence India took 42 years to add 100 million. Since 1951 when the first census in India was conducted, about 600 million have been added to the population of India. The first 100 million was added in 12.5 years, the second 100 million in 9.3 years, the third 100 million in 6.4 years, the fifth and sixth 100 million in 5.8 years. According to estimate of Sample Registration System of the Office of Registrar General of India, the population of India is increasing at 15.5 million per year. 15.5 million addition in existing population every year requires the opening of 66,000 new primary schools annually, creating 30 lakh new non-agricultural jobs every year and accommodating 50 lakh additional labourers in the agro-sector. No doubt, China has a different political system which can impose the one-child policy, but its success cannot entirely be attributed to the compulsion factor. China has certainly been able to educate its people on the importance of having a small family

and has offered lucrative financial aid to small families. It reduced its infant mortality rate to 8.16 per 1000, in comparison to 25 per 1000 in India. It has achieved almost 100 per cent literacy thereby making its people to understand the benefits of small family. In India much success of population control programmes have been achieved in Kerala where the literacy rate is the highest and where women enjoy better status as compared to other states. Rampant illiteracy among the majority of population has failed to push forward the message of family planning programmes in India. There is need to aware the rural masses on problems associated with large families and benefits of small families. A metamorphosis is needed in the attitude of people.

The National Population Commission was constituted on May 11, 2000, the day when India crossed the one billion mark. The commission is optimistic that population of India would be stabilized by 2045. Even if the goal is achieved, how we will meet the basic needs of people? The population growth rate in India has slowed down by 0.92 per cent whereas that of China's growth rate of -0.3 per cent. India is one of the most densely populated nations in the world. Its population growth is much higher than many countries. There is gap between rich and poor and the next biggest social problem before the Indians would be the battle between the haves and have-nots. Higher rural population is migrating to towns and cities which overpopulate the urban centers resulting in growing number of slums and unavailability of housing, medical and sanitation facilities. It is estimated that world's urban population would rise to 5 billion by 2030 which was around 3 billion in 2003. Tokyo, the world's most populous city with 37 million was projected to still be the largest followed by the Indian cities of Mumbai and Delhi. India should make population control a top priority because all the fruits of development are lost due to increase in population which lowers per capita needs of the people and reduces growth benefits per head. There is an urgent need for higher quality services in reproductive health and family planning together with supporting measures. Government alone cannot achieve these ambitious goals. People, NGOs, panchayats and private sector participation is also important.

(The writer is Chief Scientist and Head of KVK Reasi SKUAST).

## Fostering the Roots: The Age of MSMEs

■ SHOBHA KARANDLAJE



In today's time, the world is moving rapidly towards a technological future where artificial intelligence becomes the central focal point of global narrative. The goal of Viksit Bharat, as envisioned by our honourable Prime Minister Narendra Modi, takes into account to inspire our youth, particularly those from traditionally underrepresented groups such as SC/ST communities, women, differently-abled individuals, ex-servicemen, and economically disadvantaged citizens, to consider entrepreneurship as a viable career path.

The Entrepreneurship & Skill Development programme's vision extends beyond mere business creation. This reflects a strategic approach to addressing unemployment while simultaneously driving economic growth and fostering innovation at the grassroots level. Along with that, there is a wave of joy in the MSME sector with the announcement of the Credit Guarantee Scheme, which offers up to ₹100 crore in collateral-free loans for machinery, directly addressing the critical challenge of access to affordable credit and empowering businesses to invest in advanced technology and enhance their productivity. This democratization of credit is poised to benefit a vast number of small and emerging businesses. It is these businesses that will channel innovation at the root level and will provide a rapid trickle-down effect of wealth creation. This year's union budget introduces a crucial mechanism for providing credit support during periods of stress, backed by a government-guaranteed fund, which helps prevent businesses from becoming non-performing assets and maintains overall economic stability. The doubling of Mudra Loans to Rs. 20 lakh for entrepreneurs under the 'Tarun' category represents a substantial boost, enabling the scaling of businesses and fostering job creation. The enhancement of the Trade

Receivables Discounting System (TReDS), with a reduced turnover threshold and expanded eligibility, improves liquidity and financial management for MSMEs. The planned expansion of SIDBI branches to all major MSME clusters within three years promises more accessible financial services, driving localized economic growth. Furthermore, the establishment of 50 multi-product food irradiation units and 100 NABL-accredited food quality and safety testing labs will significantly boost the food processing sector, enhancing product quality and opening new market opportunities.

The creation of E-Commerce Export Hubs in PPP mode is another forward-thinking initiative, enabling MSMEs and traditional artisans to access global markets more easily and driving digital transformation and international growth. From the "First Timers" scheme, which provides a one-month salary, capped at ₹15,000, as a direct benefit transfer to newcomers in formal employment sectors, positively impacting approximately 210 lakh young workers, to incentives for hiring new employees in the manufacturing sector, covering EPFO contributions for both employers and employees during the first four years, benefiting 30 lakh individuals. The govt. is institutionalising safeguards and encouraging the youth to drive the engine of India's progress with their immense potential. Along with that, employer's welfare into account too is being taken care of, with the scheme reimbursing employers up to ₹3,000 monthly for two years for each additional employee earning up to ₹1 lakh per month, targeting the employment of 50 lakh new workers. The govt. is taking a concerted step by partnering with industries to set up hostels and crèches for working women, alongside specialized skill development programmes and providing market access for women-led Self-Help Group (SHG) enterprises. Inclusivity is the motto.

In the pursuit of inclusive economic growth, collaboration between industry and academia has emerged as a crucial factor, particularly in the

development of MSMEs. Recognizing this importance, the Ministry of Micro, Small, and Medium Enterprises has implemented the MSME Innovative Scheme under the MSME Champions Scheme, aiming to forge stronger links between educational institutions and the MSME sector.

On the other hand, academic institutions are hubs of knowledge and innovation but sometimes lack real-world application contexts. The MSME Innovative Scheme bridges this gap, creating a symbiotic relationship that benefits both sectors and, by extension, the broader economy. The scheme's approach is multifaceted. The involvement of 697 academic institutions as Host Institutes under the incubation component is a testament to the scheme's widespread adoption and potential impact. One of the key focuses of this collaboration is to enhance the industrial skills of students and MSME personnel. This skill development is crucial for creating a workforce that is not only academically qualified but also industry-ready. For students, it provides invaluable exposure to real-world business challenges and opportunities. For MSMEs, it offers access to fresh perspectives and the latest academic research, potentially leading to innovative solutions for their operational challenges. As of today, we have seen a remarkable growth of 17 crore jobs in the last 10 years. To put things into perspective, employment in the country increased to 64.33 crore in the year 2023-24 compared to 47.15 crore in 2014-15 as per the data published by the Reserve Bank of India (RBI). Under the visionary leadership of Prime Minister Narendra Modi, we take giant leaps ahead towards a Bharat where Vikas reaches every household and touches the life of every soul, amalgamating the collective energy towards the ideal of being a Vishwaguru. There can be no doubt that we are headed to an era of great renaissance that would usher us into the golden age of Viksit Bharat.

(The author is Union Minister of State for Micro, Small and Medium Enterprises & Labour and Employment).